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THE SINUS-SPUD

By William S. Halsted, M. D.

Many times for the past 22 years I have been reminded at the operating table and in the wards of a certain remarkable case to which I have frequently referred in my clinics as typifying in an unusual and extreme fashion nature's process of local protection and repair in her combat with infection. In this period I have seen three other cases—the last one only a year ago—which, in the essential features, were almost identical with the first.

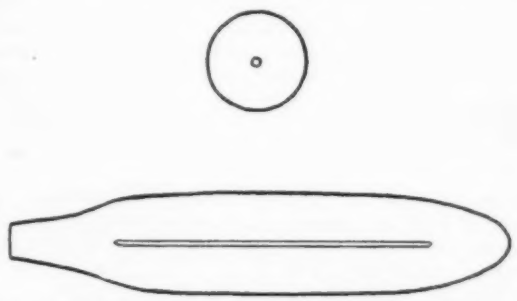
Case 1.—About 22 years ago a distinguished physician from a neighboring city consulted me in regard to a tumor which he and his collegues believed to be a cancer of the rectum. Just before leaving home he made his will, believing that his life would soon be terminated either by operation or by the disease. He was admitted to The Johns Hopkins Hospital and the story told by the notes of his case is as follows:

Surg. No. 4949. Male, æt. 59. Admitted to The Johns Hopkins Hospital December 20, 1895. Discharged January 4, 1896.

The patient states that he first observed a tumor in his perineum about two months ago. Occasionally he has noted neuralgic-like pains in this region.

In the perineum, 1 cm. to the left of the mid-line and 2 cm. posterior to the scroto-perineal junction, the tip of a hard teat-like mass can be felt. The tumor can be traced from this point across the median line to the right side and thence backward toward the rectum and bulbo-membranous urethra. The anterior, more superficial, part lies just beneath the skin and is freely movable; the central portion is less movable, and the posterior extremity is quite fixed and deep. The mass is hard and insensitive, except on rough manipulation. Rectal examination negative.

Operation December 21, 1895 (Dr. Halsted).—A straight incision through skin and fat exposed the nearly circumscribed tumor which was composed solely of fibrous tissue. In its center was a sinus which, traced with a fine probe, was found to be about 7 cm. long. It was blind at both ends. (*Vid.* Figure.) Posteriorly the tumor terminated on the aponeurosis of the levator ani muscle about at the junction of the transversus perinei and erector penis muscles. In the course of the dissection the bulbo-membranous



Approximate Dimensions of the Sinus-Spud and its Central Canal in Case 1; Longitudinal and Transverse Sections.

urethra was exposed, and the fact established that the sinus had no communication either with it or with the rectum. The wound was left unclosed with the idea that any overlooked communication with the rectum or urethra might be promptly detected. But no fistula resulted.

Case 2.—The second case of what I have termed sinus-finger or sinus-spud was also a private patient at The Johns Hopkins Hospital, but, unfortunately, I have not been able to find the history and cannot recall the name of this patient. The pertinent facts, however, I remember distinctly.

The patient, a male, æt. about 35, was short in stature, rather emaciated and of sallow complexion. He complained of a dull pain in the right iliac fossa, but denied having had attacks suggestive of appendicitis. A very hard, rather diffuse but quite nodular mass could be palpated in the region of the appendix. I expressed to the patient's friends the opinion that he probably had a cancer, either of the cecum or of the vermiform appendix, and advised exploration. The patient had a horror of the knife and refused to be operated upon. In the course of a few months he again presented himself for examination. The mass was definitely smaller and perhaps harder; it was only slightly if at all tender and caused very little discomfort. There seemed to be considerable improvement in the patient's general condition. Withdrawing my diagnosis of cancer I urged exploration, believing that the appendix was responsible for the trouble. The patient again declined operation, but returned in the course of, perhaps, six or eight months for observation. The mass diminished slowly in size until at the end of about one year it resembled in form the tip of a finger. Forcible palpation of the little spud caused no pain. Of the ultimate fate of the mass or of the patient I know, unfortunately, nothing, but I am quite sure that this was another instance of a fine sinus surrounded by a finger-like bud of connective tissue.

Case 3.—Surg. No. 11187. Male, æt. 48. Admitted to The Johns Hopkins Hospital November 16, 1900. In May, 1899, the patient had been treated for fistula in ano.

About two weeks before admission he had had quite severe pain "back of the rectum." He stated that there had been slight swelling and faint redness somewhere in this region, but he had not observed blood or pus or anything abnormal in the stools. The pain was not increased at defecation.

Examination: In the mid-line, just posterior to the scrotum is a hard, circumscribed, quite freely movable and slightly tender mass. Nearer the anal margin along the raphe is a little abnormally resistant and slightly reddened area. The two swellings seem to be connected by a narrow strip of indurated tissue. "Dr. Halsted described the prominence in the anterior part of the perineum as a finger-like mass connected with the posterior area of induration by a pencil-like process."

Operation November 17, 1900.—Complete excision of the areas of induration. The excised mass consisted solely of fibrous tissue surrounding a sinus tract. In the anterior finger-like portion the sinus was very fine and its connective-tissue capsule remarkably thick. Posteriorly the sinus was wider and its fibrous envelope much thinner. There were some tiny pockets of pus and necrotic tissue in the posterior portions of the sinus. Careful search was made for a fistulous connection with the rectum or urethra, but none was found.

Observations made by the patient during urination and defecation failed to detect escape of gas or fluid or foreign matter into the wound. There was no evidence of fistula at the time of discharge from the hospital December 15, 1900. After a little more than a year (February, 1902), however, the patient returned with a perineal fistula, which communicated with the urethra.

Case 4.—Male, æt. 45, consulted me in May, 1917, for a tumor in his perineum. He stated that he had never had any urethral trouble. Two years previously he had been operated upon for hemorrhoids. About one year after this operation he had begun to be troubled with pain in the perineum.

On examination a hard, smooth, finger-like mass about 5 cm. long and perhaps 1.5 cm. broad was found in the perineal mid-line extending backwards to within 2 cm. of the anal margin. The anterior end of the mass was rounded, definitely circumscribed and not adherent to the skin, which was normal in appearance and texture. Quite forcible manipulation of the finger-like tumor caused no pain, nor did there seem to be any tenderness on deep pressure. The rectum was examined with negative result. The patient experienced no abnormal sensations at stool or during micturition. The findings altogether were, to the best of my recollection, almost precisely the same as in Cases 1 and 3. I assured the patient that the tumor was not a neoplasm, as had been supposed, and explained to him its nature. Operation was deferred on account of urgent business affairs.

About two months later, July 29, 1917, the patient consulted Dr. Follis because the mass had increased in size and become tender. Dr. Follis, who had assisted me to operate on Case 3, immediately recognized the nature of the trouble and advised excision. For some reason operation was again deferred. On examining the patient three weeks later Dr. Follis noted that the mass had entirely vanished. Incident to its subsidence there had been observed no signs of an abnormal discharge from rectum or urethra and no unusual sensations.

In April of this year (1918) the patient consulted Dr. Follis with reference to another matter and stated incidentally that there had been no return of his perineal trouble.

We may, I think, confidently assume that the nature of the tumors or spuds was the same in the four cases here recorded. In the three perineal cases the pictures were, in every particular, so nearly identical that, presumably, they had also a cause in common. In one instance (Case 3) a urethral fistula developed two years after the excision of the sinus and its fibrous wall. Hence from this we might naturally conclude that a urethral lesion was responsible for all of the perineal spuds, notwithstanding the fact that no one of the three patients could recall having had at any time a urethritis. But this patient (No. 3) had been treated for fistula in ano a year before his perineal tumor appeared, and No. 4 had been operated upon for hemorrhoids. In the two cases operated upon by me (Nos. 1 and 3) we felt we could assert positively that at the time of operation the sinus did not communicate with either rectum or urethra. In both of these cases, furthermore, the sinus did not extend in either direction to the end of the spud. The original urethral or rectal openings must have been very minute and have become closed.

It is, I think, particularly significant that in the three perineal cases the situation of the spud was precisely the same, and the dissection in the two operated cases led to the same spot, viz., to the neighborhood of the bulbo-membranous urethra. If the three cases had been of rectal origin it is extremely unlikely that the rectal perforation would in each have been identically at the same point.

How is the disappearance of the spud in Case 4 to be explained? Did an abscess form and rupture into the urethra, or did the acute inflammatory process sterilize the chronic sinus and thus bring about absorption of the fibrous tissue and its lining? The latter explanation is, I think, the more plausible, for if an abscess had ruptured into the urethra it is likely that there would have been some indication of it either at the time or later. An analogous process is observed occasionally in atheromatous or sebaceous cysts. A wen may disappear after being inflamed; its epithelial lining becomes destroyed and the sac absorbed as a result of the infection. So, too, an empyematous gall-bladder may rapidly shrivel

to a nubbin, and an inflamed appendix to a fibrous cord. Sinus tracts of years standing heal promptly when sterilized. I recall having seen an abscess of the tongue without operation become rapidly converted into a sterile cyst with clear contents.

Correct interpretation of the condition is important, although failure to recognize the nature of the tumor could hardly be disastrous. Faulty diagnosis, however, caused three of the patients great distress.

A finger-shaped, subcutaneous tumor of the perineum, quite free at its tip and with the hardness and elasticity of cartilage, is probably a sinus-spud and may be recognized almost at the first touch of the palpating finger.

Many surgeons undoubtedly will recall transitional forms of sinus-spud—bud-like processes of fibrous tissue of various dimensions enveloping a central sinus communicating with the rectum, urethra or mouth.

MEDICAL-INDUSTRIAL RELATIONS OF THE WAR[1]

By DAVID L. EDSALL, M. D., Boston

The use now of the word "war" in a title demands that one shall offer some definite line of action, some facts upon which action may be built, or an apology. I fear that I shall leave you with the feeling that the apology is due, for I shall speak of war conditions chiefly as illuminating what we have not done in the past, or what we need to do in the future. But I have not used the word inadvertently or to excite attention, for by this manner of treatment I can still hope to indicate, if I do not specify, the directly medical demands of the moment, for they are those of the future, met as well as may be done by hasty methods; and there are several branches of the problem that are so outstanding that each must be referred to in order merely to picture the scope of the general problem, so that to go into details in all of these would be impossible and I shall rather refer you to more expert sources for details. And besides the distinctively medical problems, which are themselves sufficiently numerous and complicated, one must give at least a little thought and discussion to the world-wide influence that the war has had in arousing or accentuating movements in the management of industry and among industrial workers, movements that will certainly have profound influences and may have tremendous influences upon the world, and not impossibly with singular promptness and directness upon medicine as a profession.

If in a brief time I can give a superficial suggestion of the general relations of medicine to industry, and can combat what I think I may fairly call the common academic aloofness of medicine toward these things, can combat it without desiring to destroy a grateful and healthy conservatism in medicine, and without, of course, wishing to mingle in the bitterness and strife that our minds involuntarily attach to industrial issues—though we nevertheless must sometimes come close to these things—I shall have accomplished my main purpose.

In bringing in one of his pet views in a discussion before the British Medical Association, Clifford Allbutt once announced, "I will now trot out my old jade." Dr. Miller intimated, when he asked me to come here, that I might be permitted to do the same; but I want to dress my old jade in somewhat new trappings—or rather, they are not quite new but have been on hand for some time and I have tried them on tentatively before, but I was not sure that they appeared to fit the humor of my audience and put them away for a more convincing occasion. I think the war gives this occasion, and I shall make bold to determine whether you do.

I have long ridden a hobby that has the fascination of not only being an amusement, but of possessing both clinical and research interests and also large human interests, relating both to individuals and to groups of people. Industrial disease combines, to an unusual degree, the charm of the study of disease itself, of its etiology, and of the wide human relations of medicine, and it brings one into touch, besides, with an unlimited display of constantly changing technical processes that exhibit the ingenuity and resourcefulness of man to the full. But interesting hobbies, like men themselves, do not stay the same size or shape; they, too, either grow or swell, and this one has changed its appearance to such an extent that one needs to determine which it is doing.

We see its present proportions better if we stop speaking simply of industrial disease, a term inextricably blended in our minds with a few diseases, such as the industrial poisonings that are due specifically and beyond all doubt to industry, and think rather of the general relations of industry to health. We then see at once, that it is no longer a question, as it usually is with us internists, of an occasional patient who has suffered from an occasional severe hazard, our responsibility to whom is covered by ordinary treatment and by the advice to take an occasional dose of salts and keep his mouth clean, or to wear a respirator—which, of course, he will not do—or to change his occupation. Nor is it even covered if we go so far as to take what steps we tactfully can to see that others are protected from the danger.

It becomes at once a question that impinges upon very complex affairs. There has been a definite and increasing new medical demand in recent years in well-organized industry. This is partly due to compensation laws; partly due to clearer recognition of the cost and disorganization resulting from sickness and from the labor turnover that is in large proportion the consequence of sickness or of dissatisfaction with physical conditions of work; partly to the increased demand for labor and the need for stopping waste of that available and of

[1] Read at The Johns Hopkins Hospital Medical Society, March 18, 1918.

using some that would in times of plenty be discarded as unfit; and in large part, I am happy to believe, in consequence of greater enlightenment and humane impulse. It is a demand for men who will know how to keep employees well, how to shield them from the inevitable hazards of industry and to help in doing away with those hazards that are not necessary, how skilfully and speedily to put back at work those that are damaged by them, and how to fit the large group that are, physically, to some degree abnormal to work that they can still successfully do.

Other things even more important to industry are assuming a partly medical nature, hitherto unrecognized. I shall refer briefly to these later. Whatever results may ultimately come from this movement, it is clear that there will be necessary adjustments of medicine to it; for after all industry is the biggest and most powerful thing in the world, and considerable alterations in medicine as a profession would be slight affairs as compared with some of the fundamental changes of which there are even now suggestions in industry. The demands of the war make us see now many things that perhaps had not penetrated our consciousness very clearly before.

Society at large, employers and the working people themselves have in this country done very little about industrial health until recently, but they have in latter years moved much faster than medicine in this matter and would have moved faster still had not the impulse to progress been due chiefly to social and economic influences and but little spurred on in this country by those whose work is health and disease, for it is a fact that medical men have played a comparatively small part in it. It is highly interesting to learn the breadth of what some industries have done and plan to do in this work. To be sure these things need to be far more generally and often better done, but that fact only emphasizes the view that I wish to present and so far as I can see simply indicates that there will be far more done, and the light that the war has given is likely to make progress much more speedy and general. Medical men are evidently needed now who have the kind of knowledge and training to make them fit to aid in managing this extensive, varied and complex matter. There is now developing, as you are well aware, a distinctly new type of doctor—the industrial physician. Few people realize the opportunities for public service that these men have, and still more will have under proper conditions. An unfortunate side of their work in a considerable proportion of the rather limited number of plants where they have been thus far introduced is that in the organization they have been unduly subordinated, especially to a "welfare department", to which they need to be coordinated but not subordinated. And there has at times been in the instructions under which they work so much of "benevolent feudalism," as an able government official put it to me, that they have often not fully gained the confidence and cooperation of the working people. But in large part the fact that they have worked in a subordinate position and under rather rigid instructions has been due to the scarcity of able men of independent character, qualified to do the work and with comprehension of its important economic relations. They certainly have not been produced in any systematic way through the foresight and aid of educational institutions, but through circumstances and their own initiative; and not many have been able to develop adequately through their own initiative. They are needed now more than ever in maintaining the health of industrial workers, for we have highly dangerous occupations added through the war and they are running under extreme pressure, as are for the most part the usual industries of non-military character that are dangerous. I have had opportunity to offer suggestions to government officials in regard to the preservation of health and efficiency in the workers in those trades, and a great difficulty, the most serious difficulty, perhaps, in planning for the most evident needs in this is not with government authorities or with the most enlightened employers, but in the securing of more men trained to do the work at all well.

How big are opportunities in this work now, and first of all in the trades in which there are definite health hazards?

The importance of this part of the problem may seem too limited to many of you to arouse great interest. Indeed, I have actually had it suggested to me by medical men that to establish at the present time means of preventing even dangerous industrial poisonings is too likely to slow up production and should not be undertaken. As to this latter point, if it were necessary to have many poisonings in order to win the war, we might admit the force of the argument as we admit the need of losing lives in battle. But in industry the shoe is mostly on the other foot. Years ago the manager of one of the largest lead using companies in the country said to me that they were driven to use measures to protect their men from lead poisoning because the character of their product and the reputation of their business were suffering from losing so many skilled workmen temporarily or permanently from poisoning. This is in abstract the true point of view as to production. The most important safeguards usually require no methods or construction that consume a serious amount of time or labor, but rather demand a knowledge of and systematic application of simply applied principles. Certainly England has been under heavy pressure, but because of the need of conserving labor and because of an educated sense of right she, for example, unhesitatingly proceeded to determine, by experimental and other methods, the cause of the remarkable poisoning that was observed to occur from spreading the "dope" in making airplanes, instituted measures to control it and as soon as a substitute for tetrachlorethane was found, even though it was not quite so satisfactory, made the use of the more dangerous "dope" illegal.

As to the scope of the problem, let us consider first its extent in things of such immediate interest as the making and handling of explosives. Dr. Alice Hamilton found about 30,000 people exposed to poisonings in this work at any one time in 1916. But many more were really exposed, in view of the fact that the labor turnover in this work is enormous. With extremely fragmentary sources of information available she was able to collect 2507 cases of poisoning confirmed by

medical diagnoses. The most common of these were poisonings from nitrogen oxide fumes, nitration being an important part in the making of most of these explosives. The main effects of these fumes are much the same as those of the chief gases used in warfare. It is striking to see collected almost 1400 cases of men thus gassed before we were at war and to know that this was only a part of them. Trinitrotoluol poisoning was next in frequency with nearly 700 cases.

Though considerable and though but a fraction of what has actually occurred, what I have mentioned does not make this seem a very large problem in these days of big figures. But in poisonings alone we have to consider many other things not included in Dr. Hamilton's study, things important in war as well as in peace. There are, for instance, so many and such important ways in which our old friend lead is used that there are many more people exposed to it than to all the poisons used in explosives. How many suffer from it we have no way of learning in this country with anything approaching accuracy, though Dr. Hamilton again in earlier studies has given us valuable information. There are many more cases than we usually recognize by our ordinary medical methods, methods which, I may fairly say, scarcely take any account of occupation as a factor in ill-health. At the Massachusetts General Hospital we had, in five years preceding the time when some special attention was given to occupation in relation to health, 146 cases diagnosed as lead poisoning in the wards and outpatient department. In March, 1916, a clinic for the special study of occupational disease was started, with Dr. Wade Wright devoting his entire time to it. Those patients in occupations that are known to be likely to produce disease were sent to that clinic and some special interest was given to discovering all the lead cases among these. In the ensuing year 148 were found, of which 138 were occupational. We are not especially in contact with lead industries and this experience makes it evident that there is a good deal of it about in ordinary medical work when a trained man looks for it, and that a good deal of it is usually overlooked. The problem of poisonings is really a very considerable one. But that is only a little part of the problem of industrial health. We had in that clinic in a year over 5100 patients that had been exposed to some health hazard in industry, and in whose cases it was desirable to determine with some care and by means of trained knowledge whether the occupation had something, large or small, to do with the disturbed health. These hazards ran from sharply definite things like poisonings through the numerous almost equally definite strains to somewhat less clear things like varying exposures to irritating dusts and so on to that rather vague condition "general fatigue," which is hard to determine unless very marked, but nevertheless in its milder or more marked degrees is probably the most common and important industrial cause of inefficiency and ill-health. Surely occupation is a factor quite as worthy of study as alcohol, exposure to infections and various other things that are part of the decalogue of history taking, and it needs training in the principles of comprehending it in order to study it.

Now let us add to this the handicapped—those who are through some disability unable to follow their proper occupations or who do so with more or less peril, or who, disabled early, have never become successful wage-earners. Many of them we know could safely make a good wage and would often be improved physically if trained to a proper occupation. The training we cannot give, but the early supervision of the training and to a considerable extent the choice of a proper occupation are definitely medical problems. But to do this means to know precisely certain principles about the exact nature of individual occupations. No doctor can know the details of all occupations—all individual jobs—nor can any one else. He can, however, know types and acquire ability to judge of the details of others and of their fitness for a disabled individual from descriptions. But aside from a few able industrial physicians how many doctors know enough about jobs to know which handicapped fit which jobs, except for a very few that they have seen, but that are sadly inadequate to meet this situation—such jobs as watchman, elevator man and messenger? Physicians usually have a human interest in the ingenuity of machines and in seeing raw products become finished articles, but I think comparatively few of them often observe *precisely* what the human being at the machine does. Some time ago I spoke to the medical society in a great paper manufacturing town. That afternoon I had been to see certain processes that I was unfamiliar with and among them was the sheet calendering of fine paper, in which the sheets are fed into the rolls by hand with a rapid sharp motion of the hand and wrist, repeated many times at great speed. I asked many of the local physicians that evening if they had seen any neuroses from it. Nearly all knew the process, but scarcely any had noticed exactly what the girls did. However, upon thinking a bit, several remembered that they had seen neuroses and tenosynovitis of the right hand and arm in calenderers.

I recently spent ten days in investigating for the government the affection that occurs in workers in soft stone in association with the use of the pneumatic hammer. The disorder is not at all serious, but it had caused some apprehension among the men and some trade union excitement, and it was feared that the disquiet might spread to other trades now extremely important in war work in which the air hammer is widely used. It was a singularly good example of the importance of observing slight details of the work. It appears practically not to affect the men in these other trades, and this is chiefly because in these other trades a tool, if used with the hammer at all, is often held perpendicularly and is in any case rarely gripped firmly, whereas with the stone workers the tool is used almost constantly, is held in an oblique position and must be grasped very firmly. On such slight differences one can reasonably base a confident opinion that this affection should in no way interfere with the winning of the war.

I have always felt grateful to Sir William Osler for asking me to write certain articles for the original edition of "Modern Medicine," a task for which I felt myself very ill-suited, but which gave me a stimulus without which I should never have learned that a factory is a genial garden to the lover of etiology,

with much fruit on many a tree. It is from this standpoint of etiology that a capable industrial physician sees a factory, and from the standpoint of prevention in the mass and prevention in the susceptible individual. For instance, Dr. Irving Clark, of the Norton Grinding Works in Worcester, tells me that he takes people with hypertension, organic heart disease and various other serious diseases into the work of that factory, which is in large part unusually heavy work, and declines only 3 per cent of the applicants who pass the employment office and are sent to him for physical examination; but he designates carefully what jobs the abnormal shall do, and they are not only not harmed by the work, but are often improved by it. In other plants with less heavy work the number not accepted for physical reasons runs down to one-half of one per cent. Contrast that with the records of physical rejections from our National Army to see what kind of a job this part of the industrial physician's work is—and in the National Army the material is drawn from a group much younger and better cared for than the average of applicants for work. Consider it also in relation to what they have had to do abroad in industry during the war. How valuable there a vast amount of human material has been during the past three years that is ordinarily, to use the common harsh but pregnant term, scrapped.

But how big is the problem of the handicapped? I cannot attempt here to discuss this matter as it relates to the fighting excepting merely to say that while in the war the number involved will of course depend upon the duration and the extent of our participation in it. I have had the privilege of having a slight relation to this problem as it is being prepared for in the surgeon-general's office, and I think that I may safely state that, although the numbers may grow mournfully large, the total of those that will need vocational readjustment owing to actual disability will be decidedly smaller than is often thought, though it may run into many thousands. It is beginning to be recognized that it is a much bigger problem in peace than in war, and that unless the splendid system that is being built up to meet the war conditions is adjusted to and carried over into peace conditions the greater opportunity for service will be lost. Let me justify this seeming paradox. Last year there was an official investigation in Massachusetts of the need of vocational reeducation by the state of those disabled by industrial accidents. The number of persons thus disabled in our state each year appeared to be from 500 to 2000. In Illinois they find the yearly number to be over 2000. Multiply that by 48 states proportionately to their various industrial populations and you have a goodly problem increasing year by year. Add those disabled by non-industrial accidents, by tuberculosis of the joints and by other more or less surgical conditions, and then add poliomyelitis, which in the Cleveland survey of cripples stood next to industrial accidents as a cause of crippling, as that word is commonly used, and the problem swells to more than double. But the medically crippled are in point of fact equally within the problem and adding them makes an enormous accession. The Society for the Prevention and Relief of Heart Disease estimates that there are now in New York City among the school children alone, entirely aside from the adults, 20,000 subjects of heart disease who are bound to be more or less reduced in income and productivity by their disease and most of whom could be much improved economically and often physically by being properly fitted to do suitable work. They consider this the largest economic problem in medicine among those that have not yet been seriously attacked. I think that I do not need to go in detail into all the other important medical causes of disablement.

The problem of the handicapped is one that must be handled in part by others than doctors, and financed probably partly by industry and partly by society at large, but it must be guided in considerable part by doctors and they cannot guide it wisely by depending entirely upon others for the knowledge that is essential to make it either physically or economically a success. In caring for those disabled in war or in peace the medical man should be able to help definitely to decide whether the little details of the jobs under consideration can be performed successfully, and further—what the vocational teacher cannot tell—whether late physical effects of the work consequent upon the handicap may be expected to occur which might render education for the job ultimately fruitless.

Let me now turn to a third subject which, as I have indicated, is a part, but a large part, of what I have discussed earlier. You are aware that from the early days of the war there has been a committee at work in England called the Health of Munition Workers Committee. It is not doing entirely new work, but has greatly expanded and intensified work that had been in progress for some time before. The dominating purpose of this committee now is to aid in putting output, with a limited labor supply and a tremendous demand for munitions and other essentials, at the highest point compatible with an effort expected to be several years in duration. There has been a similar committee in this country since last summer, the Committee on Industrial Fatigue, which is a national defense sub-committee. The United States Public Health Service is intimately cooperating with it and has a body of field workers carrying on studies in factories. I have the privilege of being a member of this committee and I think that I may properly explain a little the purpose of its work and that of the British committee, as there is a tendency to misunderstand their aims. Just as we know that an athletic team may be made highly successful through careful regulation of its food and drink and other factors and especially through trained determination of the effort that it shall put forth, but that the same team goes stale if the effort be overdone, or becomes flabby if it be too little, so does trained study lead to certain quite clear principles and details that are coming to be important now when one wishes to keep industrial workers producing effectively, but avoid having them go stale. There has been a common feeling among employers that any one who is interested in this matter is really interested in shortening hours and is a partisan of labor. As a matter of fact, these committees are not working to shorten hours, but to aid in determining the optimal hours as well as the best

feasible conditions of housing, food, transportation to and from work, general sanitation and other factors in order that fatigue may not reach the point where it interferes with the largest productive capacity. It is undeniable that the studies thus far have often shown that hours should be shorter, but the studies have usually been undertaken purposely in processes where the hours were very long or the work very trying; and, on the other hand, it is true that most workers even, as well as most foremen, managers and employers, have until lately thought rather blindly that the longer the work the greater the output. But there has been a good deal of change in this recently. Many employers have latterly experimented accurately with shortening long hours and nearly always with favorable results. There are, however, under study many other things besides total hours, such as night and day work and the best distribution of these with an individual worker, the length of spells, and the effect of several brief rest periods; and there are partly at hand and partly being developed a variety of methods of determining the existence of fatigue, direct physiological methods, such as Stanley Kent's test of the acuity of vision before and after work, Ernest Martin's muscle power test, and tests of more elaborate coordinated effort partly mental, partly physical. Economic tests of great importance have been widely used, especially the actual output of groups or of individuals or the amount of power used and other such. Or direct observations are made as to evidences of weariness and of symptoms, such as headache, sleepiness, lame feet, etc.; or the actual amount of sickness is determined or of time taken off; or there may be direct physical examinations of groups of people at periods to determine any change for good or ill in their condition. In England Captain Agnew studied thus 3752 men and boys, and a group of six women medical officers studied 1326 women and girls. There are various sources of error often quite unexpected to the uninitiated in any of these methods. One source of error which you will appreciate at once is that the better wages and consequent better living conditions than many had been accustomed to before in England have interfered a good deal with reaching accurate conclusions in some instances. They have, that is at times, led to improvement when otherwise one might in all reason have expected the contrary.

I would ask any clinician or physiologist how easy he finds it to determine confidently in a human being whether there is a slowly increasing general fatigue until the fatigue has become so marked as to be serious. But clinically in all sorts of work this is often extremely desirable to know and success in many a case goes suddenly to smash because we did not know how to determine this point. The English committee has done far more toward determining this in industrial work than has ever been done before and probably some of this work will become useful for general clinical purposes. In industry interest in this work is apparently beginning to penetrate quite widely. Many of you are aware that the methods of using the working forces of Great Britain as well as of France and Italy have been very considerably modified, as have the conditions surrounding them in their work, since the earlier days of the war. An influence in leading to this that seems to have had a noteworthy part, directly or indirectly, in England, may apparently be found in these studies. In this country our committee has found the managers of factories in which the work has been done much interested in and impressed by the results and very ready to try out the suggestions that came from them. It is quite clear that it is very important to have the work sound and unbiased, if dependence is to be placed upon it in modifying things of such economic significance. I was recently asked by the executive secretary of the largest association of employers in the country to recommend to him a superior man and some younger men who should be preferably, note you, either physiologists or clinicians with a physiological training. He said that his organization wished itself to take up the study of industrial fatigue for practical purposes. Quite naturally it seemed to him that it was, in the first instance, a medical-physiological problem. I was, unfortunately, unable to help him to secure the men, partly because of war conditions partly because of the reluctance of scientifically trained men to touch anything that approaches the commercial. As bearing upon what I have just mentioned, let me remind you that at its recent meeting the American Federation of labor stated as an evident but extremely important fact that wages and hours of labor are the two great causes of conflict between capital and labor. It is scarcely necessary to insist that the most important thing in the world to-day, aside from this great war, is the conflict between capital and labor, and even in the war the social conflict has been almost as important as the military and may become the determining factor. Most of this conflict is due to the fact that heretofore these questions have usually been settled—as peace is usually made—in favor of the side that could exercise most force. It would be a vast benefit to the world if they could be settled by methods that would seem to both sides reasonable and sound and without bitterness. I think that it is in considerable part because they see possibilities of contributing largely to such a result that the gentlemen I mentioned have thought of engaging the services of physiologists or scientifically trained clinicians. It would be a grateful thing were medicine to play a noteworthy rôle in so large a drama.

I could add to the illustrations of the relations of medicine to industry, but to me it seems that those that I have very superficially discussed indicate that, somewhat quietly and only vaguely observed until they are upon us, there have grown up situations that are as yet undeveloped and still of uncertain significance and importance, but that do provide opportunities and responsibilities and require us to consider whether we have advanced as far in our point of view as medicine itself has potentially advanced, and whether, particularly, medical schools have done what they can do in future for the public welfare in this relation.

But before I go further with this query there is one more consideration that has perhaps an even more immediate interest to us and that I should therefore mention. In the discussion excited in this country by the proposed health insurance legislation it has been a general and wholly natural demand

of the profession that any broad legislation of that character must, if enacted, provide for the free choice of his physician by any insured individual. Sharing this desire and opposing this legislation, but still seeing well ahead, one of the sanest and ablest physicians in Massachusetts said to me that it is an impossible demand, or soon will be, that industry is so much more powerful than medicine that it will necessarily secure any just ends, whatever medical men wish, and that what industry needs for the sake of employer and employee alike is men trained to see and combat the hazards of industry, to get men well speedily in order to save time and disorganization and money to both sides, and to comprehend the economic relations of health in various ways as well as the psychology of groups of people.[2] I think that we need to consider whether the physician mentioned above did not speak truly when he said further that, in the increasing effectiveness of industrial organization, the whole vast body of industrial workers, and that means of course most people, might perhaps be gradually withdrawn from the clientele of individual doctors and hospitals and become the clientele of a medical service of industry—that that must happen or the profession must generally learn the needs of industry and practise them. That is a very radical thought when you consider its significance. It would take away the cake and leave only the icing. But we cannot dismiss it because it is radical. I personally think that the outcome will not be quite as he thought, but I nevertheless remember that five years ago, when I read Benjamin Moore's book picturing medicine as a national service built on a plan resembling that of the army, I thought skeptically that while perhaps coming sometime it was scarcely necessary for contemporaneous medicine even to think of adapting itself to that scheme. Nevertheless, a man who has greatly distinguished himself for wise administrative ability appears ready to propose legislation in England which in main principle is practically this same plan. And five years ago the whole British Medical Association was far more roused than ever before by the health insurance legislation, whereas now we see the official committee of that association reporting very favorably on its workings and recommending very striking extensions of it.

I do not wish to enter here a brief for any detailed future program to meet the situations that I have referred to. I wish simply, first of all, to ask myself whether, when I took up the study of industrial health as a collateral interest, I did not mistake for a hobby-horse a baby elephant that has since grown to some maturity and is now hard to guide or even to straddle and yet requires much skilled training to make him useful. I do feel impelled to ask again the question that I put a moment ago. In the very large strides that medicine has made in social and economic relations, have we physicians, individually or collectively, advanced fully with it? And since men are largely what their fathers made them, I may ask, Has the influence of medical schools upon students, that indefinable general atmosphere that is almost more influential than the facts taught—with all the increased keenness in the study of the nature, the diagnosis and the treatment of the individually diseased—has it imprinted upon them the unconscious habit of thinking of these broader relations with masses of men or has it still remained on the whole an individualistic atmosphere? I would not overlook the very patent fact that many men in the profession have lent this atmosphere conspicuously. I could scarcely do that in the

[2] Let me make a little plainer what he meant by some of these points. One of the ablest industrial surgeons in the country told me that frequently he could not allow his injured men to go to the nearby excellent hospital because he could himself get them back at work safely and much more quickly by using measures that would seem distasteful to many fine conventional surgeons, but that are nevertheless practical. Of those he demonstrated to me, let me mention two little strips of tin fastened together in a form resembling a maltese cross which, when bent down on the four sides of an injured finger that has been dressed, and then covered with a bandage, permits a man to go back to work without discomfort or danger of infection very soon after even an amputation of a phalanx.

As an instance bearing upon economic relations and group psychology I would note that 18 months ago I became much interested in the number of cigar-makers with slight symptoms of cigar-makers' neuritis *from one factory* who were sent to us within a short time at the Massachusetts General Hospital by the Industrial Accident Board for an "impartial opinion" as to their suitability for compensation. I found that a man in this factory had developed a rather severe polyneuritis after an infection, and two doctors, taking his statement that the factory was exceedingly damp, without seeing the factory, had given the opinion that that was the cause of his neuritis and he had on this ground been given compensation. Many cigar-makers have, especially of course in the left arm, slight symptoms of neuritis, but so slight that they do not under ordinary circumstances especially notice them. This opinion, however, and the fear of severe results like those in the infectious polyneuritis case, had led to a consciousness of these slight symptoms and an outbreak of excitement over the humidifying system. I visited the factory and it was a peculiarly sanitary one, but the walls being concrete one could observe a little condensed moisture upon them which in a wooden building would have been there in equal amounts, but would not have been visible. Nevertheless, the excitement led to forcing the owners into doing away with the humidifying system, probably to the disadvantage of both health and the work. I have had a number of experiences comparable with this one. On the other hand, some years ago Mr. Turner, then Commissioner of Labor, asked me to go with him and Professor Gunn to investigate the conditions and the men in the lasting department of a shoe factory where a new process had been introduced for making the box in the toes of shoes from celluloid, the latter being softened temporarily, in order that it might be fitted easily around the form, by immersing it in a mixture of acetone, denatured alcohol and a small amount of amyl acetate. The process had important technical advantages. The mixture made a disagreeable smelling stuff and the men complained of mild symptoms, such as disturbed appetite and slight headache, and some ardent leaders had brought on a strike in the whole factory, that threatened to have widespread significance, on the ground that their health was being gravely damaged. None of the men showed any actual physical damage, the exposure was mild and not likely to harm them, and they were assured that their symptoms were in no way serious and were due chiefly to the smell which could probably be mostly overcome by a blower system, which the owners agreed to put in. Chiefly as a consequence of this advice, I think, the strike promptly stopped.

place where Dr. Welch has reigned. I could not well do it and still recall the tablet on the wall of the medical clinic; and that same clinic now makes me share with you too keen and recent a sense of personal loss, a loss that involves, with all the rest that it removes, a rare development and exercise of the altruism that impels to public service and to the devoted application of precisely that sort of vision which I would wish that we all might acquire. There are individuals who do conspicuously lend this atmosphere. There are others here and elsewhere. With you I could name those who are "Somewhere in France." But I mean, Has this atmosphere become sufficiently general to hold its own in civil conditions against the daily study of the individual by the student of medicine and the young men who have graduated since medicine has assumed this character?

Just after writing the above—on a train—I met a layman prominent in this country in certain important community activities. By chance in a few moments, in another connection, he said to me that he has frequent dealings with both lawyers and doctors and that the chief contrast between the professions as they impress him in his work is that the doctor is usually an individualist, whereas the lawyer sees the community and, although the doctor is more frequently given to altruistic activities, the public-spirited lawyer usually accomplishes more because of his point of view. If that is really true, it is a matter of interest to us.

I am of course not thinking now simply of industrial health. Other great problems are with us and with them come great opportunities. For example, the Commissioner of Health of Massachusetts put me in the curious position of being chairman of the State Committee on Child Conservation, a committee born of the war, and as a member of the State Public Health Council I have for some time through another aberration of the same official been chairman of another sub-committee of that body, which among other matters has to give thought to the problem of the control of venereal diseases, the importance of which the war has so tremendously emphasized. The fact that I have occupied these two positions reminds me that Unna said once that the explanation of his having written so many books was that, whenever he was ignorant of a subject he thought he ought to know, he wrote a book on it. From this work I have learned at least that these two problems are, like that of industrial health, bewilderingly complex and vast in their importance; and I have likewise learned that while there are many pediatrists and obstetricians and syphilographers who are very skilful in diagnosis and treatment and in research, there are a few—but I think only a few—who have interest enough in these things as community problems to be of real assistance in guiding or coordinating general or local efforts to attack them. There are quite as many nurses if not more than there are practising doctors who, whether actually working in these things or not, know wisely and thoroughly the principles of etiology and of attack as community problems. Some nursing schools have for some time had elective courses for under-graduates in public health nursing and social service nursing, and there have been graduate courses in these subjects and in industrial nursing. In fact, opportunities for nursing work other than bedside nursing exist now in such numbers and variety and are of such interesting character, that in schools where the atmosphere encourages attention to these things a surprisingly large number of nurses go into them. At the Massachusetts General Hospital Miss Parsons has been much interested in guiding nurses into these community activities. The effect is shown by the careers they take up at once. Of the nurses who graduated in the last three years the gross figures as to their present work, excluding the small number who are doing no nursing work, are as follows: Of the 1915 graduates nine are doing private nursing, 34 are in institutional, public health, social service, war work or other public work. Of the 1916 graduates 10 are in private work, 54 in public work. For the 1917 graduates the figures are 11 and 32. Institutional work naturally heads the list by far, but the other activities take a noteworthy share.

Have we been quite as forward-looking as the nurses? Medical opportunities of this sort are by no means all sufficiently reliable as yet to make it wise to lead many men actually into them as careers. But they exist and are increasing and a large reorganization and systematization of medicine is almost certainly coming in many ways, perhaps rapidly, more probably gradually, and this is likely both to excite a demand for many more men to work in special lines of such kinds, and also, what is more broadly significant to medical men, it is likely to make increasingly frequent opportunities for all medical men to mingle agreeably effectual strokes of prevention with their healing or their research. And it is likely that the doctor who cannot do this wisely upon opportunity will lose public confidence and prestige, for the public looks upon us already to a goodly extent as subsidiary health officers whether we feel it or not. Let me turn back to industrial conditions to illustrate this. Last summer I had a patient admitted to my wards with a diagnosis of purpura hemorrhagica. He was very interesting clinically in several ways, but he was almost unique in that he had had recurring attacks of hemorrhage for several years and had recovered from them while still continuing at his work, which the excellent fourth-year student who gave me the story told me at once was spreading the so-called "dope" in making artificial leather, a dope which contained, among other things that he mentioned, benzol. Although the patient had the usual blood conditions of essential purpura, the student correctly believed that the case was not one of essential purpura, but of benzol poisoning. Dr. Minot will report the case because of several important items in it. I mention it now because of the sequel. I wrote the manager of the factory, told him of the case and asked him if I might look at the process which I had never seen. I was welcomed by him, shown the details of the whole factory and told the composition of the dope, which the man had correctly stated. The exposure to benzol was very severe and the ventilation very bad. The manager called in the chemist and we went over the matter together, and as a consequence he told the chemist to get rid of the benzol completely if possible and said that he would look into a proper ventilating system. But he also told me that he had had a man die some months before with hemorrhages, and though he did not know that benzol was seriously poisonous he had wondered whether the

dope might not have had something to do with the man's death and had asked the doctors in the town who had had charge of the man if it had and they had said "No." He was a humane man and openly resented the fact that this advice had led him unknowingly to expose others unnecessarily. I could multiply similar illustrations. Let me mention one that illustrates well the common willingness of manufacturers to correct gross faults when pointed out to them and where means of control are indicated. In a very large plant engaged in producing raw material that is used to an enormous extent, as benzol is, in war as well as in peace, the company officers and the plant physicians have been much worried by the fact that there have been a considerable number of cases of an extraordinary and in some instances very grave disease in their men, and they did not know how to stop it. This disorder is most interesting clinically. It nearly always begins with a peculiar gait which one writer has aptly termed the "rooster gait." It advances to produce retropulsion and propulsion of a severity that is sometimes perfectly remarkable, and besides other manifestations it causes occasionally distinct mental changes. Direct physical examination shows almost nothing and there are not any focalizing signs. It seems to be chronic manganese poisoning. The company had gone to some expense to have a clinician well trained in the study of nervous disease carry out an investigation of the disorder. He made a clinical (and in a fatal case, pathological) study and did experiments on animals to attempt to determine the cause of the disorder. These observations were negative, but through finding in the literature descriptions of practically the same symptoms in a few instances in persons exposed to manganese, which is present in this plant in large amounts, he was able to determine the cause so far as anyone can now see. He made a valuable scientific report, but the company officials were annoyed because they said his report was simply an interesting medical paper and the thing that interested them was the economic and human matter of the prevention of the condition. The chief physician of the company was an old interne of mine and knowing that I was nearby he asked me to look over the situation with a view to further study of it. I took Dr. Cannon and Dr. Wade Wright along with me and we went first to see the plant. I only epitomized what they felt at once when I wrote that further study of the nature of the disorder would be interesting and profitable from a scientific standpoint and should be done, but that the imperative practical fact obvious to anyone that entered the plant was that the dust hazard was simply amazing and the dust contained at least one substance known to be poisonous and in all probability the actual cause of the condition, and the real thing to do was to have engineers devise means for reducing the dust—a difficult problem, but not more so than others that I had known to be solved. An executive officer of the company replied that they had had such plans under consideration for some time, but that he did not believe that they would prevent the disease. In view of my letter, however, he had ordered that they be taken up actively at once. The chief physician wrote me that he had been of my opinion for a good while, but had not been able to convince his superiors and thought that an outside opinion was necessary. Very recently I have had letters from officers of the company saying that the large laboratory and technical equipment and staff of the company are available to carry out any plan of attack that I suggest. I have since had a conference with them and learned that they have nearly completed a system to control the dust at a cost of over $300,000, and are now interested in having a careful study of the etiology and treatment of the disorder and they have given us at Harvard a generous budget for a two years' or longer scientific study of the whole question.

Things of this kind are about us in great numbers and of most varied kinds. No one can become an expert in such things without serious training, certainly not simply through exercising a hobby-horse. More experts are needed and I think that we should take steps to produce them. But the most effectual way of producing experts is not simply to provide opportunities for advanced training. There are now a goodly number of men who take up careers in the laboratory branches of medicine or in the application of these to clinical research. I can but believe that this is largely due to the fact that, with the present method of teaching medical undergraduates, all can now taste these careers in their student days and those attracted by them can thus early learn their attraction; while in former years they learned it only later, if at all, and then had often become too fixed in other work to make it easy to detach themselves from it. I imagine that it will in many instances be more through chance than through wise choice suited to the individual that men will go into these public or semi-public careers until that time when they become somewhat familiar with these aspects of medicine during their medical school days. Due regard for the public welfare makes it desirable to let the field be clearly seen so that those who are suited to special parts of it may enter them. But it is desirable not only for the production of experts; I am thinking less of advanced study than of the injection during undergraduate days of a sufficient modicum of knowledge to give a clear viewpoint to all. I might have drawn in this paper much more varied and interesting illustrations from the experience of experts than from my own observations, but I have purposely used my own almost exclusively because they constitute an example—but only one of course among the work of many others—of the fact that an unofficial clinician can scarcely avoid seeing and using frequent opportunities of this sort if he has been fortunate enough to have received early a stimulating injection such as Sir William Osler could administer. Unless medicine changes more violently and becomes more strictly specialized than I am now radical enough to believe that it soon will, there will be many opportunities for laboratory men and clinicians of almost all types to be influential in these things if they have acquired the point of view which, when practised and nursed for some time, leads to real usefulness even in the absence of systematic special training. After all, as in everything else, the strength of a health organization depends rather less upon the few experts than upon the fitness of the subordinates and of the rank and file through whom most of the details are done. We now recognize that teachers of physiology, chemistry, pathology, anatomy, pharmacology, medi-

cine, sing best not solo, but in chorus and following an "extended elaboration" of the theme. I have wondered whether we equally realize this in regard to the things that I have been speaking of and I have attempted to learn from some of my own students how much they feel these things in the general atmosphere in which they are growing up—not how much of a course they have had in them, but how much a part of real live medicine they seemed to them. I have not been made vain of my own accomplishments by what I elicited. Their feelings may only too often be briefly epitomized by the response of one man who naively remembered, "Oh yes we had *that part* of medicine finely in the course on preventive medicine—but that was in the second year." It was in "the old forgotten long ago." And yet there are those who think, and I am one of them, that medicine as a profession now deals so largely and with such increasing and fascinating effectiveness with problems of the mass, that there is a possibility and even some danger that before long not many of the best minds will be contented with the traditional ministration to the individual. The latter will remain, I am sure, and should remain, the dominating duty of the great mass of the profession. But to feel that the other was through our inattention growing to be entirely out of our province would be a sad loss indeed to those of us not in official medicine. The coming generation in medicine will have opportunity to do much more of this grateful work than we; and do we not need to give them even more than our experience alone seems to indicate is necessary?

We need to keep clearly in mind, in our own activities and in teaching, the danger that the human appeal of the social problems with which we meet or the newness and fascination of the economic opportunities will distract us and our pupils from our legitimate fields of work. In the enthusiasm excited by new visions it is easy to overlook the boundaries of one's proper domain and to cultivate superficially and ineffectively distant territory that belongs to others while one's own is neglected. It is, I think, a wise recognition of this rather than simple inertia or lack of comprehension that has led many clinicians to hold off from these matters.

But we have now well reached that point in progress where we can see fairly clearly in these questions, where our contributions must be restricted to a sympathetic interest and attention and where, on the other hand, we have distinctively medical problems which offer a goodly yield of bettered health and can be attacked by accurate methods wholly agreeable to the scientific temperament and training.

Certainly in no field of medical activities, not even in infectious diseases, is there so frequently such precise knowledge of the principles of etiology and such accurate and dependable methods of study of etiology and prevention, and in none are there at present such manifold opportunities of contributing practically to improvement of health as there are in the field of industrial disease. And in no broad field are there fewer well-trained investigators.

As I view the situation in relation to the war, one of the serious needs at the moment is some organized body of highly trained men, including especially a physiologist, a chemist and an engineer, who should be seeking now for better understanding and control of the existing hazards to industrial workers, and should be alert to recognize, investigate and prevent the dangers that will arise from increasing pressure and strain, especially perhaps from the restless inventiveness of this war. At present there is a real danger that adequate attention to these matters will be aroused at best only when serious damage has been done. Such a body could work effectively only if in cordial cooperation with the Federal Health Service and the Labor Department. Likewise seriously needed is a method of establishing officially minimal standards of prevention in hazardous industries and minimal medical examination and observation of employees in such industries. And with this there must be an official method of hygienic inspection of these industries to see that these matters are understood by the many manufacturers and employees to whom all this work is now very new, to determine that the regulations are followed, and when necessary to enforce their use. This work could most advantageously be done directly by the Federal Health Service with its already well-organized division of industrial hygiene acting in cooperation with the state authorities. This will come before many years throughout the states generally, but if the war is to continue long, it must be put in operation soon as a war measure if grave damage to health and industrial efficiency is to be avoided. If done later and gradually, it can be met gradually. If done soon as a more general measure, as should be the case, it will at once be evident that it must be badly done because of the lack of sufficient men trained in the medical inspection of industries and the equal lack of those trained as industrial physicians, unless there be undertaken a rapid intensive training of men for these duties just as men have been and are being trained intensively in a variety of forms of special military medical duties in which the demand is imperative and far greater than the supply. If this occasion arises it will give medical schools opportunity to repair somewhat the deficiency that would have been much less had we been more foresighted and will initiate them into what I think they will undertake before many years anyway. Moreover, it will give opportunity for part time or full time useful public service for some medical men who are for any reason unable to undertake military service.

Though there are many things to be said and though I have but hastily and superficially touched upon a few of them, I have perhaps seemed often to wander far from the war, as I warned you that I might do. Nevertheless, I have not been far from it in my thoughts. We have been violently taught by the war that through a continued system of education the Teuton has been made to think almost involuntarily and in innumerable ways of the State when carrying out actions that to us are simply those of common individual service. Many others than I have thought that if for the Teuton conception of the State, that of an idol to be worshipped and sacrificed to, we substitute the picture simply of those who make up the State, our educational methods may perhaps gain from the distorted example of our enemies the beneficent influence that they, and those from other lands who had been in contact with their education, had hoped they might have, but which they have so grievously failed to exert.

A THYMUS TUMOR ASSOCIATED WITH ACUTE LYMPHATIC LEUKEMIA

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The relationship between tumors of the thymus and leukemia remains a subject of much interest to both clinician and pathologist. Interest in this subject is perhaps heightened by the infrequency of such cases, since, as Schridde[1] has remarked, "With the exception of the bone-marrow the thymus is the organ in the body poorest in tumors." Because of this comparative rarity of thymus tumors and the association of some of them with leukemia, the following case, studied through the kindness of Dr. Watson Campbell, seems worthy of record:

The patient, M. P., a white woman, age 42, entered the Kansas City General Hospital on January 17, 1918, complaining of pains in the back. She stated that she had been weak and had had no appetite for a month. About two weeks before admission she had begun to have headaches and pains in the right thigh, radiating from the hip down to the right ankle. She had also found her vision in the right eye impaired and had complained that "everything looked crossed." Some cough and shortness of breath had been present.

Physical examination showed a rather obese woman with a somewhat pasty color. The eyes reacted to light, the left pupil was slightly larger than the right. There was a complete paralysis of the sixth nerve on the right side and partial paralysis on the left side. The teeth showed a marked pyorrhœa alveolaris, the tonsils were hypertrophied. The chest showed a few moist râles in the axilla, the spleen was enlarged and palpable. Reflexes normal. Blood-pressure 120/185.

The spinal fluid examined on February 1, 1918, showed a cell count of 20. Nonne negative; Wassermann negative.

A blood count on February 8, 1917, showed 3,400,000 red cells, 41,000 white cells, hemoglobin 60 per cent. A differential count showed polymorphonuclear neutrophiles 12 per cent, small lymphocytes 35 per cent, large lymphocytes 30 per cent, transitionals 8 per cent, eosinophiles 2 per cent, myelocytes 4 per cent, degenerated forms 2 per cent, normoblasts 7 per cent.

The blood examination on February 11, 1918, showed 3,600,000 red cells, 21,000 white cells, hemoglobin 60 per cent. A differential count showed polymorphonuclear neutrophiles 16 per cent, small lymphocytes 17 per cent, large lymphocytes 35 per cent, transitionals 9 per cent, eosinophiles 1 per cent, myelocytes 10 per cent, degenerated forms 1 per cent, normoblasts 10 per cent.

The patient died on February 12, the day following the second blood examination. The findings of the blood examination were clearly those of a lymphatic leukemia, and the short duration of the disease with the rapid course indicated the diagnosis of acute lymphatic leukemia.

The protocol of the autopsy, performed two and one-half hours after death, is as follows: The body is that of a white women 165 cm. in length, weighing 65 kilos. The sternum is deformed, with an upward curve in the middle portion. Both lungs are crepitant and show some edema on cut section.

In the anterior mediastinum there is a rather firm, large tumor extending down over the heart (Fig. 1). This mass has a thin, tough, smooth capsule; on cut section it shows a dark reddish-brown color and is of a soft, spongy, slightly granular consistency. With the naked eye there are evident numerous connective-tissue strands running throughout the tumor dividing it into compartment-like areas (Fig. 2). When removed from the heart the posterior surface of the tumor is seen to be closely adherent to the parietal pericardium. The general shape and form suggest in appearance an enlarged uterus with its cervix turned upwards. The tumor measures 10 cm. in length, 7 cm. in width at the lower portion and 7 cm. in thickness; it weighs 189 grams.

The heart presents no especial abnormalities. The spleen is markedly enlarged, measuring 30 x 12 x 6 cm., and is very soft. The liver, pancreas, kidneys and uterus are all enlarged and of a soft, flabby consistency. The cervical, bronchial, mesenteric, retroperitoneal and inguinal lymph glands are all enlarged, but quite discrete. On cut section, all of these glands show small irregular areas of hemorrhage. The gross appearance of the brain is normal.

Microscopic examination of the liver, heart, pancreas, kidneys and uterus shows extensive infiltration with lymphocytes. In many sections this lymphocytic infiltration is so marked that the microscopic recognition of these organs is extremely difficult. Sections of the spleen show it to be filled with large and small lymphocytes and many myelocytes. Sections made from the brain show some infiltration with lymphocytes.

Paraffine sections of the mediastinal tumor were made and stained with hematoxylin and eosin, Van Gieson's stain and Mallory's aniline blue stain. Microscopic study of these sections (Fig. 3) shows that the tumor has a definite fibrous tissue capsule just under which in some places are areas of apparently normal thymus tissue. Most of the tumor is composed, however, of fine strands of connective tissue, in between which are masses of partly degenerated poorly staining cells, many of them lymphocytes and the others red blood cells. In a few places the cells are well preserved, and in such areas there are collections of small and large lymphocytes and some multinucleated giant cells. Also, there are here and there masses of cells different from the others and showing an epithelioid character. Areas of hemorrhage are very extensive throughout. There are also numerous large irregular masses staining

blue with hematoxylin and structures circular in shape, distinctly laminated and staining bluish or purple with hematoxylin. These structures resemble very much the so-called corpora amylacea or suggest degenerated Hassall's corpuscles. Degenerative changes are quite marked in all the sections.

The size of this mediastinal tumor, its shape and location, together with the microscopic picture, suggest strongly that we are dealing with an enlarged, persistent hyperplastic thymus which has subsequently undergone extensive degeneration with hemorrhage. The relationship between such a picture in the thymus and the clinical picture of an acute lymphatic leukemia is of interest in the light of the relationship between the thymus and the lymphatic system.

The possible rôle of the thymus as a leukocyte-forming organ was suggested by Ghika,[2] who concluded that the thymus is primarily a hemopoietic organ and forms leukocytes, but probably no erythrocytes. These conclusions of Ghika were not, however, supported by the later work of Noël Paton and Goodall.[3] These observers found that in guinea-pigs removal of the thymus produced a leukopenia which, however, was not persistent and passed away when the animals reached the age of sexual maturity. Schultz[4] found that in dogs removal of the thymus had no permanent effect upon the blood picture. As contrasted with these findings, however, Klose, Lampe and Liesegang[5] describe a progressive diminution in the lymphocytes in dogs which had been subjected to thymectomy. Klose describes further a lymphocytosis in dogs following injections of juice expressed from the thymus, and states also that in three patients upon whom a thymectomy was performed a permanent reduction in the number of lymphocytes followed.

The occurrence of an enlarged thymus in association with lymphatic leukemia has been noted by several observers. Obrastzow[6] observed a case of acute lymphatic leukemia in a boy of 17, associated with an enlarged thymus "the size of a fist." McCrae[7] in his study of lymphatic leukemia describes a case showing at autopsy an enlarged thymus gland measuring 13 x 4 cm. Sérard[8] has studied in detail lymphatic leukemia and its association with enlargement of the thymus. Her paper describes two cases, one in a girl of five and the other in a boy of 16. The thymus in the first case measured 8 x 6 cm. and weighed 150 grams; in the second case it weighed 60 grams. Rocaz[9] observed a case of acute lymphatic leukemia in a child of four, associated with a marked enlargement of the thymus which measured 12 x 10 x 4 cm. and weighed 200 grams. The cases of "pseudoleukemia" associated with an enlarged thymus such as those described by Eberth[10] and Fischer[11] are apparently cases of Hodgkin's disease.

Another group of observers have viewed this clinical picture from a different standpoint and regard the blood changes as secondary to the thymus condition. Palma[12] describes a case of primary sarcoma of the thymus with the blood picture of a lymphatic leukemia. In his case the thymus tumor was "as large as two fists" and there were metastases into the pericardium and pleura. Brigidi and Piccali[13] describe a malignant lymphoma of the thymus, Litten[14] describes a round-celled sarcoma of the thymus and Coenen[15] reports a case of lymphosarcoma of the thymus, all showing the blood picture of a lymphatic leukemia.

These two groups of observers have in all probability described the same disease picture, since we seem to have no definite criteria by which to judge which is primary, the thymus tumor or the blood disease. Moreover, the relationship between lymphosarcoma and lymphatic leukemia is so close as to suggest that in some cases they are merely different manifestations of the same disease.

Sternberg in 1903 expressed the view that under the term "lymphatic leukemia" two disease processes were included. One group of cases showing increase of the small lymphocytes in the circulating blood with hypertrophy of the lymphatic apparatus and infiltration with lymphocytes in the various organs, he described as lymphatic leukemia. In the second group of cases he found an increase in the blood of the so-called large lymphocytes and at autopsy tumor growths in different organs. To this group Sternberg gave the name of leukosarcomatosis.

Sternberg's views have given rise to much discussion and he has defended them on numerous occasions. They have also been attacked notably by Graetz[16], Herxheimer[17] and Fraenkel[18], the last author maintaining that leukosarcomatosis has no connection with true tumor formation, but is simply a type of leukemia tending to form tumors giving an appearance of malignant growths. Herz,[19] after an exhaustive consideration of this subject, states that the majority of observers do not accept Sternberg's view that leukosarcomatosis is a special disease of the lymphatic apparatus, but look upon it as a leukemia of a sarcomatous character which falls into a lymphatic and myeloid type. In any case, Sternberg's work has been of great value in calling attention to the aggressive tumor-forming disposition of certain cases of leukemia, and his views have led to an emphasis upon lymphatic leukemia as primarily a disease of the lymphatic apparatus instead of a simple disorder of the blood.

It is of interest that in six of the cases reported recently by Sternberg[20] three of the patients had large tumors in the anterior mediastinum probably of thymic origin. It should also be noted, however, that tumors of the thymus have been described without an abnormal blood picture, as, for example, the case reported by Gamgee,[21] who described a lymphosarcoma of the thymus in a child of five who never showed any increase in the number of white blood cells.

Lochte[22] has studied an interesting condition of the thymus associated with acute lymphatic leukemia. In two cases he described a somewhat enlarged thymus in which an "epithelioid transformation" had taken place. Here the lymphoid elements of the thymus were not so striking, but there were numerous epithelioid cells, some of them multinucleated, lying free in a loose connective-tissue framework. He believed the thymus condition bore some relation to the blood disease and stated that such changes had not been observed in chronic leukemia or in pernicious anemia. Similar collections of epithelioid cells with multinucleated cells were, as previously

mentioned, noted in our sections, but they did not form a predominating picture.

The microscopic examination of the thymus in our case suggests very strongly that we are dealing with a persistent thymus which has undergone a marked hyperplasia followed later by an extensive degeneration. The marked deformity of the sternum, consisting of a bowing outward with a large deep depression on the under surface corresponding to the thymus, indicates that the enlarged thymus had been present before the onset of the acute lymphatic leukemia.

This patient with a persistent enlarged thymus developing an acute lymphatic leukemia recalls the views of Herz,[23] who lays stress upon the relationship between the status thymico-lymphaticus and lymphatic leukemia. In our case the suggestion is strong that the enlarged thymus was an indication of an abnormal lymphatic state predisposing to disease of the lymphatic apparatus which later manifested itself by the appearance of an acute lymphatic leukemia.

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DESCRIPTION OF ILLUSTRATIONS

FIG. 1. The enlarged thymus as it appeared lying on the heart. The thymus has been divided in two, only the left half showing in the illustration. The heart in the illustration was not that of the patient but a heart of the same size which was better adapted to photography.

FIG. 2. One-half of the thymus tumor. The tumor is nearly symmetrical.

FIG. 3. Photomicrograph of a section from the thymus tumor. (Zeiss obj. AA, oc. 4. Hematoxylin and eosin stain.)

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FIG. 1.

FIG. 2.

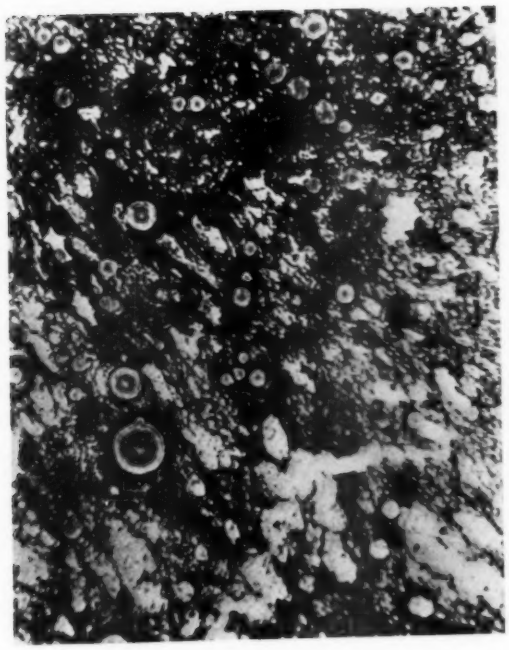

FIG. 3.

WIT AND SATIRE ON THE PHYSICIAN IN HEBREW LITERATURE[1]

By HARRY FRIEDENWALD, M. D., Baltimore, Md.

Satire made its appearance at an early date in Hebrew literature and has ever since enjoyed favor among the Jews. In the Bible there are numerous satirical passages. It is not surprising, therefore, that Hebrew writers should have used this form of literary expression to rebuke the physician or to condemn the medical quack.[2] It must be remembered that these have suffered in like manner in other literatures.[3]

The earliest satirical reference in Hebrew appears to be the statement in II Chronicles, XVI, 12 and 13:

And in the thirty and ninth year of his reign Asa was diseased in his feet; his disease was exceeding great; yet in his disease he sought not to the Lord, but to physicians. And Asa slept with his fathers, and died in the one and fortieth year of his reign.

This contempt for the physician did not prevail among the Jews, as is seen in the chapter on physicians in Ecclesiasticus, XXXVIII, 1, 15, in which the physician is regarded with honor as the agent of the Lord:

Honor the physician according to thy need of him with the honors due unto him; for verily the Lord hath created him; for from the most high cometh healing, etc.

The earliest Hebrew satirist during the Middle Ages who used his lash upon physicians was Joseph Zabara, who was himself a physician. He lived in Barcelona in Spain during the latter half of the 12th century. Zabara was a poet and wrote a work entitled "Sefer Shaashuim" (Book of Delight), containing proverbs, anecdotes and folk-tales, besides much matter of a scientific character on the various branches of medicine and on other sciences. This work has very recently been re-edited by Davidson.

I have gleaned the following from Israel Abrahams' essay on "The Book of Delight":[4]

A philosopher, says Zabara, was sick unto death, and his doctor gave him up; yet the patient recovered. The convalescent was walking in the street when the doctor met him. "You come," said he, "from the other world." "Yes," rejoined the patient, "I come from there, and I saw there the awful retribution that falls on doctors; for they kill their patients. Yet, do not feel alarmed. You will not suffer. I told them on my oath that you are no doctor." . . . .

One rather longer story may be summarized thus:

Satan, disguised in human shape, met a fugitive husband, who had left his wicked wife. Satan told him that he was in similar case, and proposed a compact. Satan would enter into the bodies of men, and the other, pretending to be a skilful physician, would exorcise Satan. They would share the profits. Satan begins on the king, and the queen engages the confederate to cure the king within three days, for a large fee; but in case of failure the doctor is to die. Satan refuses to come out: his real plan is to get the doctor killed in this way. The doctor obtains a respite, and collects a large body of musicians, who make a tremendous din. Satan trembles. "What is that noise?" he asks. "Your wife is coming," says the doctor. Out sprang Satan and fled to the end of the earth.[5]

The next writer to whom I shall refer, one whose satires are renowned, is the poet, Judah Al Charisi, who lived in Spain in the early part of the 13th century. His home was probably Barcelona, which he describes as "the congregation of princes and nobles,"[6] and he travelled much, even to the Orient. He translated many important works into Hebrew.

Charisi's description of the itinerant quack has been excellently translated by Dr. Solomon Solis Cohen and published in *The Medical Pickwick*.[7] The writer pictures vividly the methods of the quack who has collected great crowds about him. When they have left he calls him to account for playing the rogue's game and is answered thus:

"Truly I go about to seek a living,
Even as God in His mercy may provide it for me.
For the time is evil; hard as a rock have I found her,
And in her heart there is no pity for my poverty.
Therefore, when thou art minded unto chiding,
Chide not me, but chide the time."

Another Hebrew poet of this period was Jedaiah Ben Abraham Bedersi, who was born in Beziers in 1270. He published his first poem when he was scarcely 15 years old, and at the age of 17 he produced his "Sefer ha-Pardes" (The Book of the Garden), an ethical work. He produced many other works, poetical and philosophical, as well as theological commentaries.

In the "Sefer ha-Pardes" we find the following medical maxims:[8]

1. Four things are sources of joy for four classes of men. The moon brings joy to thieves; sinfulness of the people to the king; immorality to enemies; and the wrath manifested by the Creator towards His creatures is a source of joy for physicians.

2. When you are in need of a physician, you esteem him a god; when he has brought you out of danger, you consider him a king;

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[1] The writer gratefully acknowledges his indebtedness for help received from Professors L. Ginzberg, I. Friedlander, I. Davidson, of New York, from Dr. E. N. Rabinowitz, of Baltimore, and especially from Professor Alexander Marx, Librarian of the Jewish Theological Seminary of America.

[2] Quackery has flourished at all times. In the early part of the 9th century Rhazes wrote a severe condemnation of quackery, explained the methods of the quacks and the reasons why the populace is so easily won over by them. This interesting document has been translated from a Hebrew MS. and published by Steinschneider in Virchow's Arch., XXXVI, p. 570, and XXXVII, p. 560. Rhazes tells how he went to great pains to expose the knavish trickery and charlatanry of the quacks, but he also shows the necessary limitations of scientific medicine.

[3] "The Evil Spoken of Physicians," Charles L. Dana, The Charaka Club, I, p. 77.

[4] Jewish Publication Society, Philadelphia, 1912, p. 12.

[5] This story has been retold by two modern writers: by Robert Browning in his poem, "Doctor," and by Israel Zangwill under the title "Death and Marriage" in his book, "Without Prejudice," New York, 1896, p. 187. According to Professor Louis Ginzberg the story is "one of the many variations of an Indian fable." Comp. Benfey, "Pantschatantra," I, pp. 520-525, and II, p. 551.

[6] Graetz, III, p. 387.

[7] January, 1916.

[8] Published in Hebrew by J. L. Dukes, in the *Lebanon*, V, pp. 503-504 (Paris, 1868), from an Oxford MS.

when you have been cured, he becomes a human like yourself; when he sends his bill, you think him a devil.[8]

3. The inhabitants of a city are under greater obligations to the physician than to the king.

4. There are two questions which are very puzzling: Who shall cure the city physician when he falls ill, and who shall execute the executioner when he is found guilty?

5. Two men may look upon the face of the king—the physician and the artist.

6. Two men are accompanied with much honor—the judge on leaving the court-house, and the physician on leaving the house of the sick.

7. There are many slight illnesses which the physicians declare serious in order to increase their fees.

8. Many physicians know nothing of medicine, but even the dangerously sick may be benefited by the expression of their faces and their well-spoken words.

9. When you select a physician, choose a friend and a man of experience.

10. Sudden death is a decree from heaven, for which the physician is not to be blamed.

11. Three classes of men, even when educated and cultured, are held in poor esteem: the foreigner, the libertine and the physician.

12. The thoughtless physician says, "What have you done?" The wise physician says, "Do thus."

13. He is no physician who has not slain many patients.

14. Two classes look forward to speedy wealth: the heirs of the sick in whom they rejoice, and pharmacists, who rejoice in physicians.

15. Most physicians you meet reach a ripe old age, because the Angel of Death wishes to give them a chance to increase his victims.

16. Were all physicians your friends rejoicing in your health, you would find no one to treat you (without pay) in your illness.

17. The physician and the musician will not be admitted after death either into the World of Reward or into that of Punishment. When the musician and the physician depart from this life, the former takes his musical instruments and his baton, and the latter his books and prescriptions and they approach the entrance of the gate of the World of Reward. There they request Methuselah and Noah to grant them admission. In reply to the question, "Who are you?" the physician says, "I cure all diseases and illnesses; I enable human beings to live a proper life and make their existence agreeable by guarding them against disease." The musician says, "I fill their hearts with gladness and turn the souls of men from sorrow to joy and I rescue them from an ocean of anxiety." Thereupon the gatekeepers declare: "You cannot enter here. We have plenty of joy; the light of divine inspiration shines down upon us; the company is highly respectable and sorrow and grief are so far removed from us that we have no need to be entertained by musical performances. Again, physical defects are unknown to us; we are in good health and need not fear any diseases. No illness can attack us that we should need a physician to cure it. But we would advise you to go to the World of Punishment which is full of bitter suffering. Perhaps you may be of some use to the poor unfortunates that dwell there in anguish." On hearing this, the physician carrying his books and the musician playing on his instruments, both shaking their heads, go in the direction indicated, until they arrive at the entrance to the gate of the World of Punishment. There they call upon Og and Goliath the Philistine, the gatekeepers, to grant them admission. When questioned about their identity, they repeat their former replies and thereupon are told: "Leave this place at once, for music is of no avail in a place of wailing. The finger of God weighs heavily here and the dwellers cannot be helped by music and play, but only by their wailing. Nor can they be cured by any physician, for who can remove the disease which has been inflicted upon them except by adding new and terrible disease and suffering. Go to that high mountain that is headed towards the wilderness. When the musician falls ill, the physician shall cure him, and when the physician is full of grief, the musician shall gladden his heart with his music. Go thither; there you will find an acacia tree; its fruit shall serve as your nourishment and its leaves as your medicine. When your wives die we shall send them to you."

No less famous than those that I have cited was Kalonymus ben Kalonymus, a Provençal writer and philosopher (born in 1286, died after 1328). He studied medicine, but did not practice it. He spent some time in Rome on an important mission.

His writings and translations include a number of medical works. Among his numerous writings there is one entitled "Eben Bochan" (The Touchstone) an ethical treatise written in 1322. "The treatise is written in cadenced prose". . . . and reviews "all the social positions of which men are proud and proves their vanity." At the end he enumerates the sufferings of Israel during the three years during which he had written the book. In it he holds up the quack physician to ridicule. In a market-place, a man in gold-braided coat, with rings covering his fingers and with chains dangling over his waistcoat, is addressing the people that crowd about him. He tells them of his marvelous powers. Hirelings in the crowd whisper his praises. Many fools are induced to seek his help and pay him heavily.

Kalonymus explains the quack's method: Each case he regards with serious countenance; he discovers the ailment by looking at the urine; but the medicines required to bring about a cure are very expensive and he cannot prepare them without prepayment. The money is collected and then he proceeds to describe how to prepare his cure-all, with all manner of substances and ridiculous ingredients. If the patient recovers, it is well; if he dies, the quack in anger blames those who prepared the remedy for not carrying out his directions. Kalonymus condemns the quacks, because their art is lying and deception; all their boasting is empty falsehood; their hearts are turned away from God; their hands are covered with blood; wise teachers of the Talmud refer to them when they declare that certain "physicians are fit only for Gehenna."

While in Rome, Kalonymus won the friendship of another poet, Immanuel of Rome. Immanuel ben Solomon ben Jekuthiel, better known as Immanuel of Rome, a friend of Dante, was born in Rome about 1264 and died about 1330. He was a poet of distinction as well as a physician. In one of his stories an incident is related that occurred to the author in the course of his practice as a physician. He was called to a patient who suffered from indigestion, and who happened to belong to that class of people who fancy themselves endowed

[8] This theme is repeated frequently by later authors, as we shall see below. The same theme is found in the Regimen Sanitatis Salerni (see translation by Ordronaux) and is reprinted in the Annals of Medical History, No. 1, p. 53, and ascribed to Cordus (1486-1535).

with great poetical talents. Immanuel prescribed some medicine for his patient and advised him at the same time to remain in bed till the following morning, when he hoped to find him completely recovered. But the patient . . . . disregarded these orders, got out of bed and composed a long poem. This he showed with much pride on the following morning, telling his physician at the same time by way of reproach that the medicine prescribed was quite useless, and and had produced no effect upon him. "Pardon me, my friend," said Immanuel, "my medicine has indeed had some effect upon you: it has removed from your brains a fair quantity of poetical rubbish."[10]

In another story Immanuel describes a physician's visit to a prude:

She lay on an elegant bed, putting the moon to shame with her beauty. . . . . I approached to feel her pulse. . . . . She covered her face and folding her garment about her arm, she said: "Feel my pulse through my dress." . . . . I took a brick, placed it upon her right hand and holding a fire-pan in my own I felt her pulse with it and thus made sport of the lady. . . . .

He next describes a mass of absurd remedies which he prescribed and shows that the young lady repaid doubly for her tricks.

The next satirist to be referred to is Galipapa, who wrote a Hebrew satire on physicians under the title, "The Physician's Aphorisms." A translation of this work has appeared in this BULLETIN.[11]

We shall now leap over several centuries and take up the satires of a modern Hebrew writer. The author to whom I refer is Isaac Erter, a physician who was born in Galicia in 1792, and died in 1851. He is well known as a brilliant Hebrew satirist. In one of his satires, "The Transmigration of the Soul," he tells of the adventures which a soul meets with, how it passes from one body to another, once leaving the body of an ass to enter that of a physician.

The soul informs the author that it had prospered greatly, not on account of its cleverness or ability, but because it had acted according to certain practical rules, and it recommends that the author follow them in his profession:

1. Powder your hair white, and place on the table of your study a human skull and some curious skeletons of the animal world. Those coming to you for medical advice will then say that your hair must surely have turned white through overwork in your profession, and through your protracted studies in the domain of natural science.

2. Fill your library with large-sized books that are richly bound in red and gold. No matter whether you ever open and read them or not, people will always have a high opinion of your great acquirements and wisdom.

3. Sell and pawn everything for the sake of having a carriage of your own. Your patients may die right and left through errors of judgment, yet the fact of having a carriage waiting outside their doors will shield you from adverse criticism.

4. If you are called to a patient you must pay less attention to him and his malady than to those persons who are around about him. On leaving the sick-room assume a grave face, and say that the case is a critical one. Should the patient die, then you will have hinted at his death; but if, on the other hand, he gets well, his relations and friends will naturally attribute his recovery to your extraordinary skill.

5. Have as little as possible to do with the poor. For, as they will only send for you in hopeless and desperate cases, you will not gain any honor or reward by attending them. Therefore, be exceedingly reserved with them, and keep them at a distance. Let them wait outside your house, and those who pass by will look with amazement at the crowd patiently waiting to obtain your services.

6. Consider every medical practitioner as your natural enemy, and speak always of him with the utmost disparagement. If he happens to be young, then you must say that he has not had sufficient experience, and can do no good; and if he is old, you must declare that either his eyesight is bad, or that he is a bit demented, and is not fit to be trusted in important cases.

7. If asked to take part in a consultation with other physicians, you will be acting wisely if you always protest loudly against the previous treatment of the case by your colleagues. Whatever the issue of the case may be, you will be on the safe side.[12]

HUMOROUS AND SATIRICAL HEBREW POEMS

We find scattered through Hebrew literature many short poems bearing upon the physician. As a taunt at the too busy doctor take the following:

When Abraham Ibn Ezra, the poet (1088-1167), saw that it was impossible for him to earn a livelihood in his native country, he determined to try his fortune abroad. He thus visited Egypt at the time when the famous Maimonides (1135-1204) was the physician at the court of the Sultan Saladin. He made several vain attempts to see him and in the end composed an epigram of which the following is a translation:

I call on my lord in the morning,
I am told that on horse-back he's sped;
I call once again in the evening,
And hear that his lordship's abed.
But whether his highness is riding,
Or whether my lord is asleep,
I'm perfectly sure, disappointment
Is the one single fruit I shall reap.[13]

The following selections are translations from Hebrew poems referring to physicians. The same themes are expressed in different poems, but for the sake of completeness they are all cited. Most of the poems are taken from a collection made by Steinschneider,[14] and reference to their source is indicated by "St." and the number given in his list at the end of each poem. No attempt has been made to render the Hebrew rhyme.

The following poem was written by Hillel ben Samuel, physician and philosopher in Italy in the 12th century, as an introduction to his translation of Bruno de Lungoburgo's "Chirurgia Magna":

Promise to serve everyone who is ill with thy wisdom
But do not promise to cure a physician.
Demand thy payment and the reward for thy service
Whether he dies or is cured.

[10] From "Immanuel di Roma, a Thirteenth Century Hebrew Poet and Novelist," by J. Chotzner, Jew. Quart. Rev., 1892, IV, p. 64.

[11] March, 1918.

[12] This translation is taken from Chotzner, "Hebrew Humour," London, 1905, p. 132.

[13] From Chotzner, "Hebrew Humour," p. 61.

[14] Ztschr. f. hebräische Bibliog., VIII.

Eat not and sleep not at his home.
Let thy visits be only professional.
Then mayest thou ask him a double fee when he is cured.
Rely on a pledge and not on a verbal promise.
Serve princes in illness and accident,
Their gifts in showers will not fail you!
But if you attain to the service of the fair sex
Then you will be adorned with gold and jewels! (St. 16.)

The following poem is found in the Zabara collection and is also quoted by Shem Tob Ben Joseph Palquera, a poet of the 13th century and perhaps a physician, who recommends the practice of medicine as the noblest of all professions. It has been put into English rhyme by Ettleson: [15]

Quoth Fate unto the Fool: A doctor be,
Who, killing folks off, netteth income large;
So hast thou vantage o'er Death's Angel;
He must take the lives of people free of charge. (St. 5.)

The following is a parody on the preceding and was written by Solomon da Piera, a Spanish poet, about 1400:

Said Time to the shrewd one: A doctor be
And cunningly array thee in crimson
Thus art thou preferred to all men of wisdom
Who are clad in black because of their knowledge. (St. 4.) [16]

The two following poems were written by Isaac ben Solomon Al-Habib, who lived about 1370-1426 in Sicily, and who was the author of astronomical works:

Old men asked the Doctors
To straighten the rounded back of the aged.
The physicians answered that time had made crooked the back of the old man
And who could make it straight? (St. 9.)

* * *

A full wallet cures the sick
Fattens the lean, gives strength to the weak
But its lack is a sore ill
For which the Doctor's wisdom is of no avail. (St. 12.)

* * *

The following was written in Spain in the 14th-15th century:

For each person will clothe himself in sickness as in a garment.
Approach and see the answer.
In this book will be revealed immediately
The cure and relief.
Truly if medical books were lost
This one alone would teach thee how to cure. (St. 15.)

The following is found in a number of Spanish and Italian manuscripts of the 14th and 15th centuries:

When the ailment increases the doctor is exalted;
Then is he called prince and leader.
Lip vows and offerings are showered upon him
Nor is there a dearth of kind words.
He promises a house filled with good things,
A possession of field, yea, and a fortified town.
But as his health returns he rejoices;
When his ailment begins to depart
He recites the Hallel (a prayer of praise)
The Ahabti (Ps. cxvi) and the Min Ha-Mezar (Ps. cxvii, 5).

When he again begins to take food,
To drink wine and to eat meat
Then he says "I shall not see the Doctor."
When he demands pay for his service, as is right, he says:
"Behold in him Satan asking for reward:—
"When I see him my strength leaves me.
"Verily it is God who heals without charge,
"He gives bread to all flesh,
"He heals the sick, but not the physician.
"Through an angel he cures the distressed."
He asserts that the Creator has removed his affliction.
"He who does good to all his creatures."
He says that words of promise
Do not hold when uttered under pressure.
"If I made a vow, it is no vow.
"If I bound myself, there shall be no binding.
"My vows are absolved
"As to drinking and to eating." (St. 6.) [17]

This theme is similar to that cited by Ordronaux, "Code of Health of the School of Salernum" under "How to Forestall the Ingratitude of Patients."

The following was written about 1400:

Do not think that you can evolve the book of medicine out of your understanding.
You must receive information from those who have preceded you
So that through them you will reach perfection. (St. 3.)

This poem is found in a Spanish, an Italian and an African manuscript of the early part of the 15th century:

The fool despises the physician,
And does not look to him for help.
He ascribes to nature
All cures and healing.
He denies the evidence
The Lord placed in this Law:
"For the Doctor he shall pay." [18] (St. 13.)

The two following poems are found in three Spanish manuscripts of the 15th century:

The countenance of the doctor is like that of angels, exalted;
In the eyes of the patient while the pains are increasing,
His words are sweeter than dripping honey,
And are listened to as the voice of the Lord from among the Cherubim.
But in a little while when his pains abate,
Lo, he is looked upon as other friends.
And when health returns
And the Doctor asks for his gold pieces
He becomes like unto Satan in the form of a man
And his words are not sweet to the ears. (St. 18.)

* * *

Oh Doctor!
At night shed thy light like the moon
(In our trouble do thou afford relief)
And promptly do thou bring redemption
To the heart that is aching and the entrails in pain.
He that places his trust in thee
That "captive exile shall speedily be loosed." (Is. li, 14.) [19]

[15] See Jewish Quart. Rev., N. S., 1, p. 159.

[16] *I. e.*, Charlatanry brings greater advantage than the real wisdom of the scholar.

[17] A vow made under compulsion is no vow. *Cf.* Nedarim 3, 4 and Gemara *ad loc.*

[18] Rashi's commentary on Exod. xxi, 19.

[19] (The biblical verse continues "and he shall not die and go down into the pit."
Prepare thou for him a remedy against his destruction. (St. 19.)

The three poems which follow are taken from the appendix to Judah ben Shabbethai Ha-Levi's "Milhemet ha-Hokmah weha-Osher" (end of 12th century) which was published in Constantinople in 1543. It comprises 31 short poems, of which the following are 1, 13 and 27:

Every ill man fears death and hopes that he may be cured;
And when told that the physician is coming, he feels happy
And he longs and waits for the utterances of his mouth.
For this reason any fool and inexperienced man finds it possible to be a physician.

* * *

A learned physician,—how lovely! But the most honored is he
Who practices, whose own eyes see the diseases, and who
Makes money when he raises himself [when he is proud?].
Therefore, learn to get practice and stretch forth your
Hand to take either ox or sheep, for the main thing is not
To learn, but rather to practice.

* * *

Mighty in song and higher in rank than a captain of fifty
Is the glory of the medical profession, having a name among
The thirty [heroes of David]. On the day of Purim, send (the doctor)
A double gift to bring joy to God and man.

The two following poems appeared in a collection of short poems published in Constantinople in 1577; they are reprinted in Davidson's edition of Zabara, p. cxxii.

I am astonished at the physicians of our time,
When I behold their deeds and their deceit!
I saw them assembled near one (who called)
For their help and for relief from his ills;
When they cure they boast of the glory of their work,
But when they take life they say that God has killed;
They lay blame upon the sick who are innocent,
Yea, in vain "they made long their furrows" (Ps. cxxix.) [20]
They demand great pay for shedding blood and
Fill their money bags with silver! [21]
Is there anything like their evil in the world?
Can the earth endure their insolent arrogance?

* * *

He, who wishes to be a doctor
Yet is a fool and an ignoramus
Better that he be a baker
And his name be not known. (St. 26.) [22]

The following was found by Professor Marx in a manuscript [23] among a number of satirical epitaphs, composed by Immanuel Frances (born in Mantua, 1630, died in Leghorn, 1703):

Give thanks, oh reader, to the Lord, your Creator,
That you never fell into the hands of this doctor.
For you would not now read this poem
If while he lived, he had been your doctor.

[20] Prolong their explanations for their failures.

[21] Play on word "Damim," *i. e.*, money and blood.

[22] Play on the words "Rophe" (physician) and "Ophe" (baker).

[23] The manuscript is "Halberstam 437," fol. 74d, now in the Library of the Jewish Theological Seminary, New York.

The following is a preface to the work on "Diet" by the renowned R. Isaac Israeli; it was placed in the Hebrew edition by some translator:

Clothe thyself in Doctor's garments and don fine raiment
When visiting princes and the sick;
Examine well the body of the patient and his symptoms;
Judge according to all the affected limbs;
Do not open thy mouth and lips in vow
Until he weighs out for thee his silver shekels!
And if the signs appear well in thine eyes
Serve him as a Prince and Ruler.
Keep up thy courage, do not be confused
And do not promise to raise high the low [*i. e.*, cure the sick],
And do not assure a cure or relief.
For know that it is not in thine hand to accomplish it,
But to God alone is the power
And to the physician it is possible with this help to bring recovery.
The man who is sick is like unto a ship
In the midst of the sea, and the physician is the pilot.
With the lips of thy mouth speak pleasing words,
Let thy face shine upon the Jew and Gentile
And with the hand of righteousness
Mete out kindness,
With tongue of kindness utter words of wisdom.
And guide them in eating and drinking, following
This book of dietetics.
Study it and look carefully into the book
Which was composed by R. Isaac, the man of great deeds. (St. 14.)

The three following poems were published by Moses Hayyim Soschino in 1778:

How is it—I wondered—that the man I know for a fool, the people regard as a physician
And empty into his hand their bags of wealth?
But perhaps this reward is all his profit,
For well have (the Rabbis) said,
"The best of physicians is doomed to Gehenna." (St. 2) [24]

* * *

A famous physician has taken up his abode
In the assembly of the dead.
He intends to cure them and bring them to life,—
Therefore has he set up his throne there.
But behold like the messengers of Saul
He will remain with them
Until the days of transgression and sin are over.
Till then, master, you will not be ransomed! (St. 20.) [25]

* * *

All ye inhabitants of the earth sing with glee!
See, the dead are to return to life
For a doctor has gone to them to cure them
See, the exile of Edom and Yavan is at an end;
ended is the exile of Babylonia. (St. 10.)

The four poems which follow are without definitely assignable dates but were probably composed in the 15th century:

Ask, oh Doctor, ask thy reward from those that seek thee
And accept it on the day that thy service pleases,
Remember that the sick forget on recovering
All your drugs and medical remedies. (St. 21.)

* * *

[24] Talmud, Kiddushin iv, 14.

[25] According to Steinschneider this is a humorous epitaph.

I met a physician and asked him why
Are your garment and your head red?
Are your garments as one who treads in a winepress
(Is. lxiii, 2),
Or is it the blood of those you have slain? (St. 25.)

* * *

Where is the physician who understands the body,
Who distinguishes like from unlike,
Who recognizes which humors ascend and which descend,
Which will grow weak and which will grow strong,
And what can cause them to be changed;
What will "break the snare"[26] [cure the disease]?
I sought him but I did not find him.
There is none to choose the grain from the chaff!
I found the physician lying in wait[27] with his cane,
With no care whether the live be buried.
I ask him how he can thus shed blood.
He answered "This is the way of men." (St. 1.)

* * *

The honor of the physician and the time of his highest
esteem are in the spring
In all [the months of] Sivan, and of Tammuz and of Ab.
Man!—know and understand; see that in these months
The Lord causes his creatures to be sick.
Remember, the physician is like unto the Hebrew bride-
groom who invited his guests;—
When they come, he is respected as a prince,
When they leave, he is treated like an orphan.

[26] Ps. cxxiv, 7.
[27] Exod. xxi, 13.

The poems here cited are for the most part found in a number of different manuscripts. Professor Alexander Marx, who directed my attention to them, concludes that they must have enjoyed wide popularity.

The selections which I have given show that the physician was often made the target of wit and satire in Hebrew literature—but only the ignorant, the unscrupulous, the pretentious and the quack. No people has more consistently shown its regard for the profession of medicine than have the Jews. They have devoted themselves to medicine as a favored profession in all the ages of their history. They have laid down rules of ethical medical conduct that have never been excelled. Their scorn for the quack and the charlatan was as intense as was their admiration and respect for the "faithful physician"—a term which, in greatest reverence, they applied to God.

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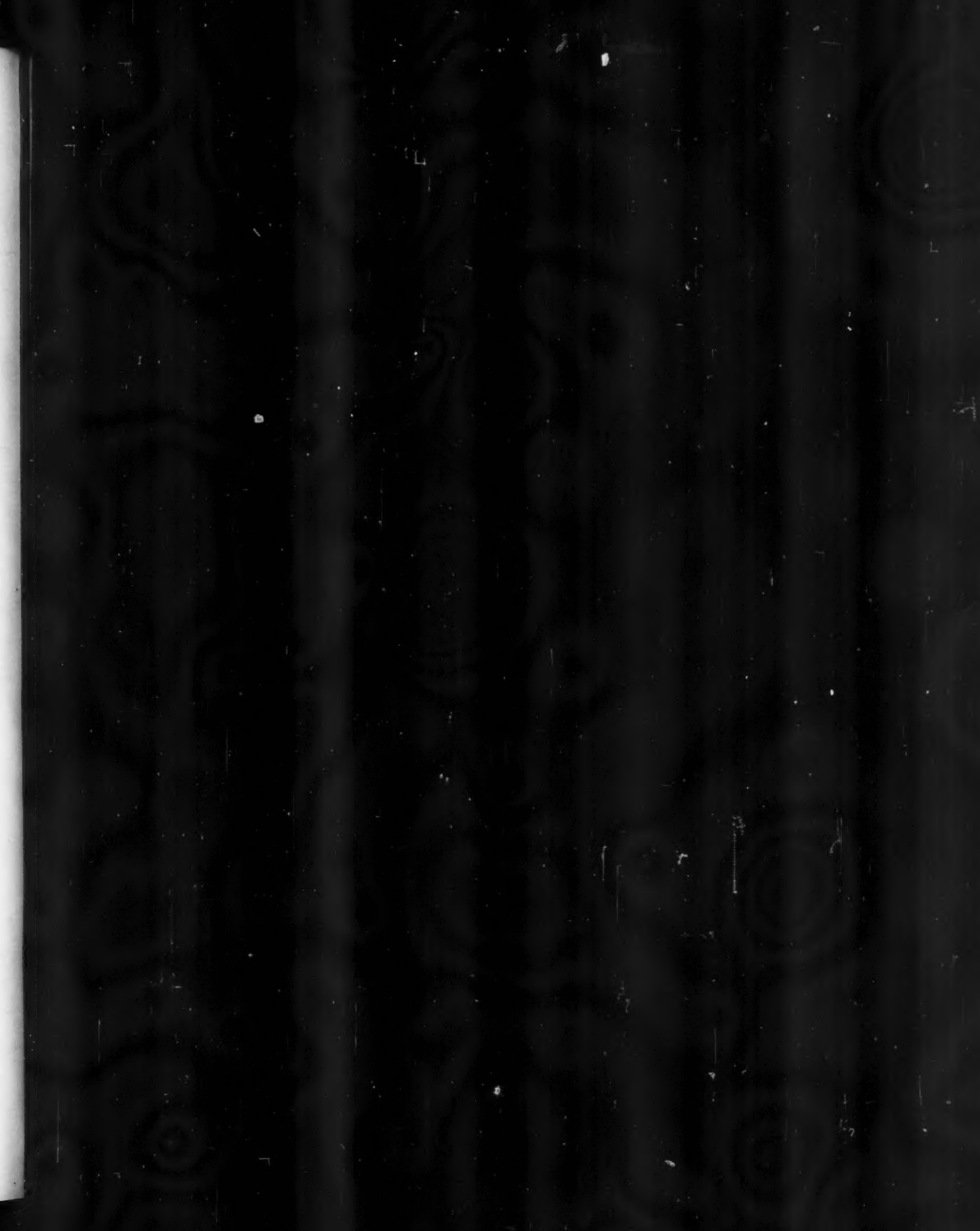
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